IN THE SPECIFICATION:

Please amend the Specification as follows.

Please AMEND the last paragraph on page 1 and bridging on page 2 as shown below:

Among conventional forging methods for producing cup-shaped or shaft-shaped mechanical parts, a cold forging method is commonly used where a material is formed at a temperature below its transformation point by a die and a punch (e.g., see Patent Document 1 listed below). In this method, the material undergoing the forging must be coated with lubricant film, or otherwise, the forging apparatus is seized. A cylindrical workpiece with an unwrought surface of approximately 75 in Rockwell hardness Scale B turns to have a forged surface of 100 or even higher in Rockwell hardness Scale B after it undergoes the first stage of profiling a core end, the second stage of preliminarily upsetting, and the third stage of further upsetting and immediately before the fourth stage of forming the workpiece into a cup by forging.

Please AMEND the first paragraph on page 2 as shown below:

There is no way to forge ~~the~~ a workpiece as hard as ~~the Scale B~~ or higher than 100 on Scale B, and an "intervening" process should be conducted between the third and fourth stages, including the steps of low-temperature annealing to drop the hardness, shot blasting to ~~eliminating~~eliminate surface oxide film or oxidized scales and bonderizing to form chemical coating over the surface of the workpiece. Instead of ~~boderizing~~bonderizing, insufflating the workpiece with lubricant may attain lubricating effects.

Please AMEND the second paragraph on page 2 as shown below:

Among the aforementioned lubricating methods, the bonderizing is ~~unsatisfied~~unsatisfactory ~~to~~as it drastically ~~reduce~~reduces a lubricant film thickness after a single step of forming, and the procedures with successive forming steps at a greater forming rate often bring about disappointing lubricating effects. Moreover, with any means for insufflating with the lubricant, it is hard to uniformly coat the workpiece or the die, and if a greater forming rate causes the lubricant film to be discrete, the formed product may be defective, and this is also undesirable for work environments.

Please AMEND the last paragraph bridging on pages 4 and 5 as shown below:

The present invention is made, allowing for disadvantages of lubricant deterioration and ignition during the conventional extrusion procedures mentioned above, and accordingly, it is an object of the present invention to provide a forming method and a forming apparatus that are, without extending a processing time compared with the conventional practice, capable of sufficiently lubricating a formed object and forming ~~at~~it ~~safety~~safely without the lubricant igniting under pressure.

Please AMEND the fifth paragraph on page 6 as shown below:

After the lubricant sprayed from one of the nozzles has been dried, the lubricant is sprayed from another of the nozzles.

Please AMEND the first paragraph on page 8 as shown below:

As can be seen in Fig. ~~2~~1, the press 14 has first to fourth press units installed serially equidistantly from one to another: the first press unit 20 acting as a forward extruder for profiling a core end, the second press unit 22 as a preliminary upsetting mechanism, the third press unit 24 as a finishing upsetting mechanism, and the fourth press unit 26 as a backward extruder for forming raw material in cup.

Please AMEND the last paragraph bridging on pages 8 and 9 as shown below:

The first and second feed bars 30, 32 have nozzle-retaining frames 42 and 43 attached and separated from the grip controllers 36 which are dedicated to the third press unit 24, by means of associated nozzle controllers 40, and the nozzle retaining frames 42, 43 have their respective distal ends provided with first and second lubricant nozzles N1 and N2, respectively. The first and second lubricant nozzles N1 and N2 are slanted downwardly and inwardly. The first and second lubricant nozzles N1 and N2 are binary fluid nozzles that use high-pressure air to spray lubricant. To avoid mutual interference among the first and second lubricant nozzles N1 and N2, the nozzle retaining frames 42 and 43, and the feed bars 30 and 32, only in the presence of the feed bars 30 and 32 in their respective upper dead spots, the nozzle controllers 40 shift the first and second lubricant nozzles N1 and N2 to their respective work positions, namely, the upper dead spots.

Please AMEND the second paragraph on page 10 as shown below:

A lubricant vessel 140 hermetically containing lubricant ~~L~~LU is provided with a stirrer 142 pneumatically activated by compressed air from the compressed air supply 102 and is supplied with compressed air through a third air decompressing valve 144. The lubricant ~~L~~LU held in the lubricant vessel 140 is transferred to the first and second lubricant nozzles N1 and N2 via pipeline connected at the bottom of the vessel. The first and second 5-port pilot switch valves 106 have their respective electromagnetic valves 150 connected to a control panel 150.

Please AMEND the first paragraph on page 11 as shown below:

After completing the upsetting by the third press unit 24, compressed air is supplied to the air cylinder 108 of the first nozzle-retaining frame 42 and the air cylinder 116 of the second nozzle-retaining frame 43. In this way, the air cylinders 108 and 116 respectively raise the first and second nozzle retaining frames 42 and 43, and as depicted in Fig. 4, the first and second lubricant nozzles N1 and N2 are shifted to their respective work position to spray lubricant onto the workpiece W. In one embodiment of spraying the lubricant ~~L~~LU, both the first and second lubricant nozzles N1 and N2 alternately spray the lubricant onto the single workpiece W, four times from one of the nozzles and totally eight times from both of the nozzles, for 0.14 seconds each time at an interval time of 0.01 seconds from one spraying to another.

Please AMEND the last paragraph bridging on pages 11 and 12 as shown below:

The workpiece W at the initial stage of the spraying is heated to approximately 200 °C due to forming heat developed during the steps of the profiling, preliminary upsetting, and finishing upsetting that the workpiece W has undergone. Hence, the lubricant ~~L~~LU sprayed is instantaneously vaporized when it reaches the heated workpiece W. As a consequence, eight-layered lubricant coat is on the machined surface of the workpiece W, and thereafter, it undergoes backward extrusion in the fourth press unit 26 to advantageously attain the cup forming.

Please AMEND the second paragraph on page 12 as shown below:

Application of waterborne lubricant in use of plastic forming is affected by the temperature of the lubricant, the time required for spraying the lubricant, and a dilution rate of the lubricant. For example, Table 1 below shows the results of a spray test where a pair of nozzles (BIMV4515 available from H. Ikeuchi & Company, Ltd., Osaka, Japan) were used to alternately spray lubricant onto the surface of horizontal carbon steel piece of 80 mm in diameter under the following conditions: The nozzles were diagonally and symmetrically opposed to each other 333 mm above the carbon steel piece at an angle of 45 degrees to its horizontal surface, and jetted the lubricant with 0.15 MPa in air pressure and 0.10 MPa in lubricant pressure.

Please AMEND the first paragraph on page 14 as shown below:

The present invention is applicable to an extrusion procedure at a temperature

equal to or below the transformation point of material for cup-shaped products such as a constant velocity universal joint outer race, and shaft-shaped products, as well as to a forming procedure for press products ~~required~~requiring high rigidity.

Please AMEND the second paragraph on page 14 as shown below:

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view of an extrusion apparatus according to an embodiment of the present invention;

Fig. 2 is a cross sectional view taken along the line II-II of Fig. 1;

Fig. 3 is a diagram illustrating a progressively transformed workpiece in a sequence of stages in press units; and

Fig. 4 is a circuit diagram illustrating a control system for nozzle controllers.